

<b>Notice of Allowability</b>	Application No.	Applicant(s)
	10/721,093	SHIN ET AL.
	Examiner	Art Unit
	DAVID VU	2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTO-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 11/26/03.
2.  The allowed claim(s) is/are 1-8.
3.  The drawings filed on 26 November 2003 are accepted by the Examiner.
4.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All      b)  Some\*      c)  None      of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached  
 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of  
 Paper No./Mail Date \_\_\_\_\_.
7.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

#### Attachment(s)

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
 Paper No./Mail Date \_\_\_\_\_.
4.  Examiner's Comment Regarding Requirement for Deposit  
 of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
 Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

*Shuland  
David Vu  
Primary Examiner AU 2818*

## **DETAILED ACTION**

### **Reason for allowance**

1. The following is an examiner's statement of reason for allowance: in the context of the entire claim, the cited references do not teach a method for manufacturing a capacitor of a semiconductor device by forming a barrier metal layer on the entire surface of the semiconductor substrate to fill up the storage electrode contact hole; planarizing the barrier metal layer using the hard mask layer as an etch stop layer to form a barrier metal layer pattern and removing the hard mask layer.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

### ***Conclusion***

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited prior art teaches a method of manufacturing a capacitor of semiconductor device. In particular, Melnick *et al.* (US 6,274,899) teaches a method for forming a capacitor electrode having conductive regions adjacent a dielectric post, but does not discuss using the

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hard mask layer as an etch stop layer to form a barrier metal layer pattern then removing the hard mask layer. Hong (US 5,940,703) teaches a method for forming DRAM capacitor that utilizes the formation of an oxide layer and the subsequent etch-removal of a portion of the oxide layer located in the gap between a first masking layer and a second masking layer in order to form the minimum separation required between the lower electrodes of adjacent capacitors but does not discuss forming a barrier metal layer on the entire surface of the semiconductor substrate to fill up the storage electrode contact hole.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Vu whose telephone number is 571-272-1798. The examiner can normally be reached on Monday-Friday 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David Vu

Primary Examiner